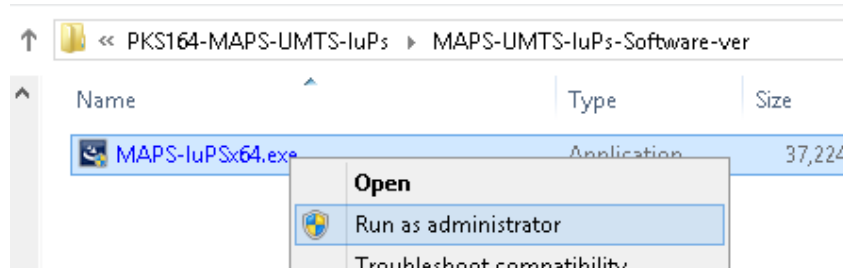


Software and License Installation

DO NOT CONNECT USB DONGLE TO THE PC FIRST. Perform Software installation first, followed by License installation and then plug-in the USB hardware dongle to the PC.

- PC Requirements
 - Windows® 7 and above Operating System (**64 bit Only**).
 - Core i3 to i7 (or equivalent), 4 GB Memory, NIC, and USB 2.0 Ports.
- Plug-in the **USB Installation Stick** (pen drive) to the PC. This is provided with the shipment package by GL Communications.
- Navigate to **\\PKS164-MAPS-UMTS-IuPs\MAPS-UMTS-IuPs-Software-verXX** folder, right click **MAPS-IuPSx64.exe** and select **Run as Administrator**. Follow the onscreen instructions and complete the installation.




- Navigate back to root directory in USB installation stick (pen drive) to **\\GL-Dongle License Installer** folder, execute **GLDongleLicenseInstaller_x64.exe**. Follow the onscreen instructions and complete the installation.
- NOW PLUG-IN the USB Dongle to the PC to the USB 2.0 port of your computer. Windows® should install all required drivers automatically. A red light should appear on the dongle indicating that the device is functioning correctly and ready to use.
- It is recommended to reboot the system after the software installation. If you had problems with installation so far, refer to [Troubleshoot](#) section explained in this document.
- You can verify if the required licenses are installed. Navigate to **C:\Program Files\GL Communications Inc\GLDONGLE** directory, execute **appl_list.exe** and confirm that the PKS164 (UMTS Iu-PS Interface Emulation) license is listed.


Verification

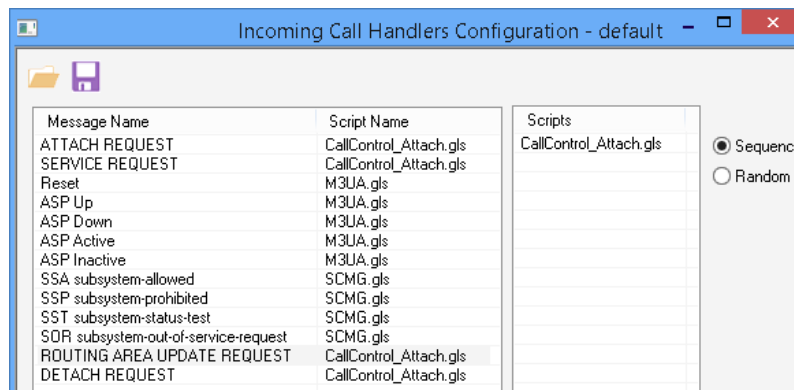
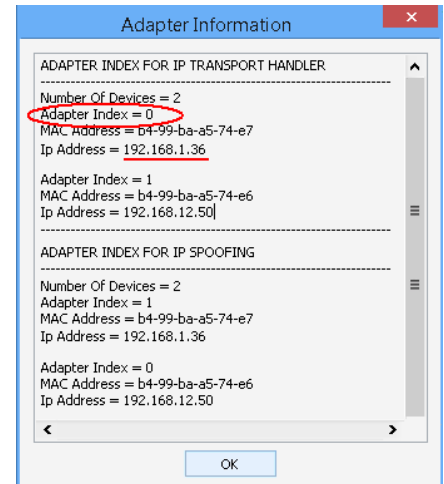
For functional verification, **MAPS™ IUPS** application can be configured on single PC.

On first instance, MAPS™ is configured as **RNC** (Radio Network Controller), and on the second instance, MAPS™ is configured as **SGSN** (Serving GPRS Support Node) nodes simulating supported procedures. The following explains **MAPS™ IuPS** configuration on the same PC in loopback mode.



First MAPS™ IuPS (GUI) – (SGSN)

- Right-click on **MAPS-IuPS** application shortcut icon created on the desktop and select ‘Run as Administrator’ to invoke the application. The first instance of MAPS™ is configured for **Call Reception**.
- While invoking the first MAPS-IuPS instance, verify the following in the Protocol Selection window -
 - **Protocol Standard** is set to **UMTS IUPS**
 - **Protocol Version** to **3GPP**
 - Select **Node** as **SGSN**. Click **Ok**
- By default, **Testbed Setup** window is displayed. Click  and select **Self Test** and check for the parameter default values as listed below:

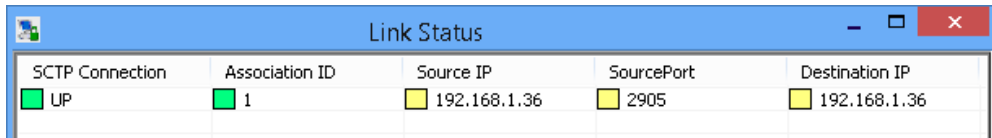
- The **Display Adapter Info** option from the **Help** menu displays all the network adapters available in the system. Choose and set the **Adapter Index** value displayed against the IP address in use.
 - **M3UA Termination Type** is set to **SGP**, to handle server association.
 - Set **SGSN IP Address** to PC IP address
 - Set **SGSN Port** is **2906**
 - Set **SGSN Point Code** to **2.2.2**
 - Set **RNC IP address** to PC IP address
 - Set **RNC Port** to **2905**
 - Set **RNC Point Code** to **1.1.1**
 - Click  **Save** button and overwrite the **Self Test** configuration file.
- On the same MAPS-IuPS main window, from **Configuration** menu > select **Incoming Call Handler Configuration** and invoke the window. Verify that **CallControl_Attach.gls** script is set against **ATTACH REQUEST, SERVICE REQUEST, DETACH REQUEST** messages. Exit from the window.





Second MAPS™ IuPS (GUI) – (RNC)

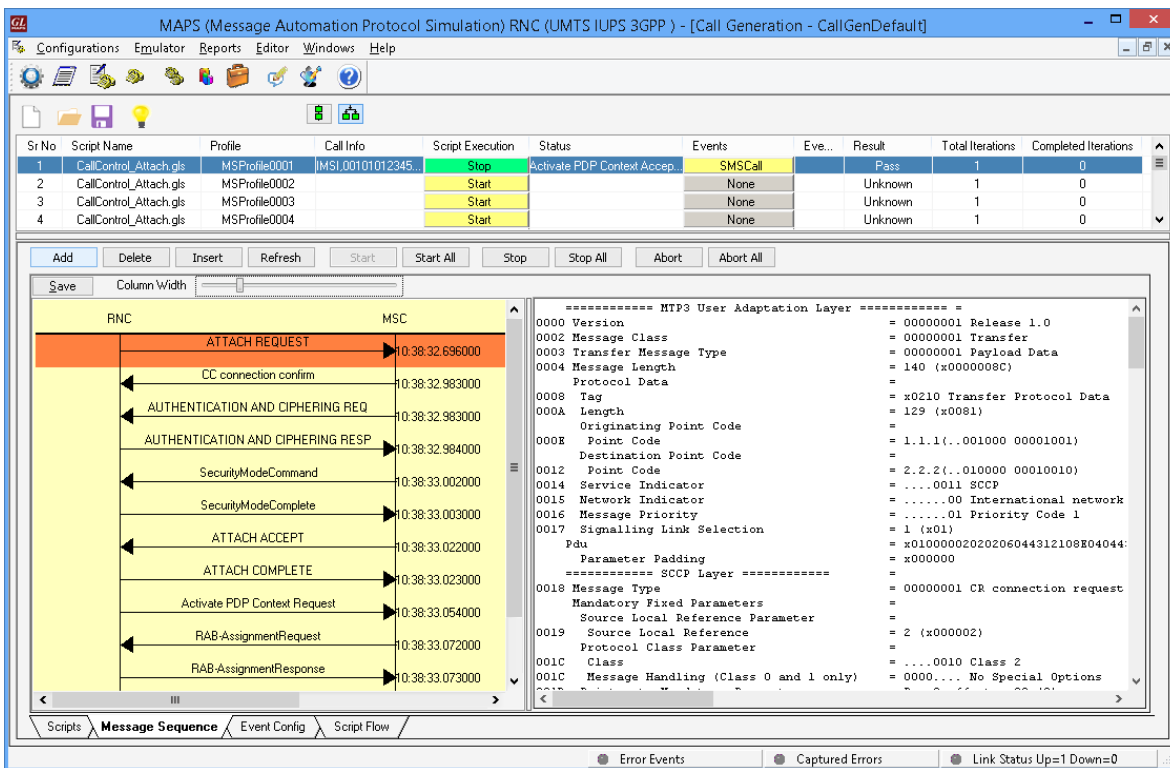
- Right-click on **MAPS-IuPS** application shortcut icon created on the desktop and select 'Run as Administrator' to invoke the application. The first instance of MAPS™ is configured for **Call Generation**.
- While invoking the second MAPS-IuPS instance, verify the following in the Protocol Selection window -
 - **Protocol Standard** is set to **UMTS IUPS**
 - **Protocol Version** to **3GPP**
 - Select **Node** as **RNC**
 - Click **Ok**
- By default, **Testbed Setup** window is displayed. Click  and select **Self Test** and check for the parameter default values as listed below:
 - The **Display Adapter Info** option from the **Help** menu displays all the network adapters available in the system. Choose and set the **Adapter Index** value displayed against the IP address in use.
 - **M3UA Termination Type** is set to **ASP**, to handle client association.
 - Set **RNC IP Address** to PC IP address
 - Set **RNC Port** is **2905**
 - Set **RNC Point Code** is **1.1.1**
 - Set **SGSN IP address** to PC IP address
 - Set **SGSN Port** to **2906**
 - Set **SGSN Point Code** is **2.2.2**
 - Click  **Save** button and overwrite the **Self Test** configuration file.

- **Start** the testbed on both the MAPS instances (RNC and SGSN)
- On both the MAPS instances main window, from **Reports** menu > select **Link Status** option to verify the link status. Verify that the **SCTP Link Status** is **UP** (indicated in Green color) before placing the call. Refer to [troubleshoot](#) section for any issues.



SCTP Connection	Association ID	Source IP	SourcePort	Destination IP
UP	1	192.168.1.36	2905	192.168.1.36

- On both instances of MAPS-IuPS (RNC and SGSN) main window, click **Call Reception**  icon and observe that the **Check_SCTP_Status.gls** script is activated.
- In the second MAPS-IuPS (RNC) instance, click the **Call Generation**  icon on main window, and invoke the **Call Generation** window.
- By default, multiple call instances loaded with **CallControl_Attach.gls** script with **MSPProfile0**** profiles are displayed. Select the instance loaded with **CallControl_Attach.gls** script with **MSPProfile001** profile and click **Start** button and initiate call generation.
- Return to first instance of MAPS-IuPS (SGSN), in the **Call Reception** window, observe that the calls are automatically received running the Rx script.
- Wait for the calls to terminate, and verify the call flow under the **Message Sequence** tab at both generation and reception end.
- Select any message in the ladder diagram and observe the respective decode message on the right pane for the respective message.



Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Eye...	Result	Total Iterations	Completed Iterations
1	CallControl_Attach.gls	MSPProfile0001	MSI_00101012345...	Stop	activate PDP Context Accep	SMSCall		Pass	1	0
2	CallControl_Attach.gls	MSPProfile0002		Start		None		Unknown	1	0
3	CallControl_Attach.gls	MSPProfile0003		Start		None		Unknown	1	0
4	CallControl_Attach.gls	MSPProfile0004		Start		None		Unknown	1	0

Message Sequence Diagram (RNC to MSC):

- ATTACH REQUEST (10:38:32.636000)
- CC connection confirm (10:38:32.983000)
- AUTHENTICATION AND CIPHERING REQ (10:38:32.983000)
- AUTHENTICATION AND CIPHERING RESP (10:38:32.984000)
- SecurityModeCommand (10:38:33.002000)
- SecurityModeComplete (10:38:33.003000)
- ATTACH ACCEPT (10:38:33.022000)
- ATTACH COMPLETE (10:38:33.023000)
- Activate PDP Context Request (10:38:33.054000)
- RAB-AssignmentRequest (10:38:33.072000)
- RAB-AssignmentResponse (10:38:33.073000)

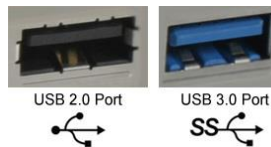
Decode Message (HFTP User Adaptation Layer):

```

0000 Version = 00000001 Release 1.0
0002 Message Class = 00000001 Transfer
0003 Transfer Message Type = 00000001 Payload Data
0004 Message Length = 140 (x0000008C)
Protocol Data =
0008 Tag = x0210 Transfer Protocol Data
000A Length = 129 (x0081)
Originating Point Code =
000E Point Code = 1.1.1(.001000 00001001)
Destination Point Code =
0012 Point Code = 2.2.2(.010000 00010010)
0014 Service Indicator = ....0011 SCCP
0015 Network Indicator = .....00 International network
0016 Message Priority = .....01 Priority Code 1
0017 Signalling Link Selection = 1 (x01)
Pdu = x01000002020206044312108E04044:
Parameter Padding = x000000
===== SCCP Layer =====
0018 Message Type = 00000001 CR connection request
Mandatory Fixed Parameters
Source Local Reference Parameter = 2 (x000002)
0019 Source Local Reference = 2 (x000002)
Protocol Class Parameter = .....0010 Class 2
001C Class = .....0010 Class 2
001E Message Handling (Class 0 and 1 only) = 0000.... No Special Options
  
```

Troubleshoot

- **“Unknown device” error while installing USB Dongle.** If you see this error, ensure you have installed the GL Dongle License Installer software first and then plugged the USB Dongle to the PC. The USB Dongle will then be recognized as “SafeNetInc. USB Key” and appropriate drivers will get installed automatically. If problem still persists, plug the USB Dongle to a different USB2.0 port and try again.
- **Error: “Security Error: Application is not licensed”,** if you see this error when you run MAPS™ IuPS it indicates a problem with either your dongle or license file.
 - First verify that the dongle is plugged in and the red light is on
 - To use MAPS™ 64-bit version – use *GLDongleLicenseInstaller_x64.exe* utility to install licenses
 - Navigate to *C:\Program Files\GL Communications Inc\GLDONGLE*
 - Run *haspinfohl.exe*. Verify that Status is **OK** and make a note of the Serial #.
 - Run *appl_list.exe*. Verify that there is a line in the table reading *PKS164 UMTS Iu-PS Interface Emulation* with the serial number you noted above.
 - Ensure that the Hardware Dongle is plugged to USB 2.0 Port on the PC. One can identify the type of USB port as shown in the image below.



- If the **dongle** does not appear in **haspinfohl.exe**, verify that it appears as a USB device in the **Windows Device Manager**. If it does not appear even in the device manager, remove the dongle and plug it into a different USB port, preferably one directly on the motherboard.
- **Error: Fails to start SCTP Services and associated SCTP Link status is Down,** follow the steps below -
 - **Run MAPS™ IuPS application as administrator** – right-click and select Run as Administrator option.
 - **Turn OFF Windows Firewall** - navigate to Control Panel > Systems & Security > Windows Firewall, click Turn Off windows Firewall for all networks.
- **Error: “Unable to create GLIpHandler:Invalid Arguments”,** if you see this error when you start the Testbed from MAPS™ IuPS application it indicates that the Network Adaptor is not configured correctly.
 - From **Help** menu -> run **Display Adaptor Info** and obtain the **Adapter Index** for the IP address in use, which has to be appropriately configured in the Testbed.
- If you cannot resolve the issues, please contact GL Communications at info@gl.com for technical support.